WHAT IS CLAIMED IS:

1. A method of determining a relative position and orientation between a base camera and a non-base camera, comprising:

measuring a path of an object with the base camera in a base coordinate frame;

measuring the object path with the non-base camera in a non-base coordinate frame;

calculating transformation parameters based on the object path;

applying the transformation parameters to the object path measured by the non-base camera such that that the object path measured by the non-base camera may be expressed in the base coordinate frame.

2. The method of claim 1, wherein the object path is a person moving around a scene.

3. The method of claim 1, wherein calculating transformation parameters comprises performing matching of data measured by the base and non-base cameras.

4. The method of claim 3, wherein data matching is used to solve a set of transformation equations.

5. The method of claim 4, wherein data matching comprises selecting a time value and matching points of the object path as measured by the base camera at the time value with points of the object path as measured by the non-base camera at the time value.

6. The method of claim 5, wherein interpolation is used to generate a data point at the time value if no data point was measured at the time value.

7. The method of claim 3, further comprising using an error minimization technique to determine transformation parameters with the least amount of error.

8. The method of claim 7, wherein the error minimization technique is a least squares solution.

9. The method of claim 7, wherein the error minimization technique is a least median of squares solution.

10. The method of claim 3, further comprising applying a time offset to data from at least one of the base and non-base cameras to correct for unsynchronized data between the base and non-base cameras.

11. The method of claim 10, wherein a set of time offset value and corresponding transformation parameters are calculated and an error minimization technique is used to determine the time offset value with the least amount of error.

12. A method of measuring a relative pose between two cameras, comprising:

selecting a time offset value corresponding to a time shift between the two cameras; and

calculating a transformation parameter using the time offset value capable of transforming data in a coordinate frame of one of the two cameras into a coordinate frame of the other of the two cameras so as to obtain the relative pose.

13. The method of claim 12, further comprising applying the time offset value to data from at least one of the two cameras.

14. The method of claim 13, wherein the data are measurements by the two cameras of a path of an object.

15. The method of claim 13, wherein a plurality of time offset values are selected and a corresponding transformation parameter is calculated for each of the plurality of time offset values.

16. The method of claim 15, wherein one of the plurality of time offset values is chosen as a most correct time offset based on an error function.

17. The method of claim 16, wherein the error function includes a least squares solution.

18. The method of claim 16, wherein the error function includes a least median of square technique.

19. A method of calibrating a first and a second range camera, comprising:

measuring a path of an object with the first range camera to generate a first observed object path;

measuring the object path with the second range camera to generate a second observed object path; and

Sub B1 cont

calculating a transformation parameter that causes the first observed object path to approximately overlap with the second observed object path so as to determine a relative pose between the first and second range cameras.

20. The method of claim 19, wherein the transformation parameter is calculated using a time offset value.

21. A calibration system for calibrating range cameras, comprising:

a data input module that can transmit data measured by the range cameras;

a data synchronizer that can synchronize the data from each of the range cameras;

a data matching processor that can match the synchronized data from each of the range cameras; and

an error `minimization processor that can use the synchronized data to compute a transformation parameter having a minimum error.

a

22. The calibration system of claim 21, wherein the data is obtained from the range cameras measuring a path of an object in a scene.

23. The calibration system of claim 21, wherein the data synchronizer uses a time offset value to synchronize the data and the time

offset value is used by the error minimization processor to compute the transformation parameter.

24. The calibration system of claim 21, further comprising a coordinate selector that can select a base coordinate system for use in the calculation of the transformation parameter.

25. The calibration system of claim 24, further comprising an interpolation module that can interpolate data for use in the data matching processor.